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ABSTRACT

In order to determine whether preschool children can successfully identify externalizing symptomatic behaviors (aggression and hyperactivity) in their male classmates, and whether children's perceptions are associated with peer-rated popularity and rejection, 154 preschool boys and girls were interviewed through the use of a peer-nominating procedure. Behavioral data on the preschool boys were also provided by their respective teachers. Results indicated that (1) the peer nominations fulfill the psychometric criteria of interrater reliability, stability, and validity; (2) peer nominations of externalizing behavior correlated significantly with teacher ratings of the same behavior; (3) peer nominations of rejected children correlated significantly with both teacher ratings of, and peer nominations of, hyperactivity and aggression; and (4) contrary to previous findings, the two externalizing dimensions of hyperactivity and aggression were not differentially related to peer popularity and rejection. Additional findings accounting for the inconsistency with previous results are discussed. (Author/RH)

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Peer Perceptions of the Behavior of Hyperactive Children

Richard Milich
Department of Psychiatry
University of Iowa

Steven Landau and Gretchen Kilby
Educational Psychology
University of South Dakota

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Abstract

In order to assess if preschool children can successfully identify externalizing symptomatic behaviors in their male classmates, and if these perceptions are associated with peer rated popularity and rejection, 154 preschool boys and girls were interviewed using a peer nomination procedure. Behavioral data on the same preschool boys were also provided by their respective teachers. Results indicated that preschool children are capable of providing stable ratings of popularity, rejection, and aggression, that boy and girl raters can supply comparable ratings, and that these ratings are not a function of the age of the rater. Additionally, it was demonstrated that teachers and peers reflect significant convergence in their ratings of hyperactivity and aggression and that teacher ratings of peer problems significantly agree with actual peer nominations of popularity and rejection. Preschool boys who were rated as aggressive were more rejected by their classmates whereas boys who were rated as hyperactive were both more popular and more rejected.

Research over the last two decades has suggested that peer ratings of popularity and rejection may be one of the most powerful, albeit ignored, clinical tools available. Peer relations, especially nominations or ratings of peer rejection, have been found to have both good interrater reliability (Weir, Stevenson, & Graham, 1980), and short- and long-term stability (Olweus, 1977). More importantly, perhaps, peer sociometrics have been found to have good predictive validity, for periods lasting as long as ten years. For example, Cowen, Pedersen, Babigian, Izzo, and Trost (1973) found that peer nominations taken in third grade (primarily peer rejection) were more powerful predictors of later psychiatric problems than were any of the other predictors analyzed, including teacher ratings, test data, self-report data, and even the evaluations of mental health professionals. Although this was not the first study to document the predictive utility of peer ratings in clinical outcome (cf. Roff, 1963), the results did dramatically highlight the interrelationships between early peer problems and later maladjustment. Other studies on the predictive power of peer relations have replicated and extended these findings to include the following outcome measures: later juvenile delinquency (Roff & Sells, 1968; West & Farrington, 1973); aggression ratings at age 19 (Lefkowitz, Eron, Walder & Huesmann, 1977); early dropping out of school (Ullman, 1957); psychiatric disturbance (Roff, 1963; West & Farrington, 1973); and job dismissals and trouble with the law (Janes, Hesselbrock, Myers, & Penniman, 1979).

Given these consistently significant findings, it would appear that poor peer relations may be a valuable clinical tool in identifying children at-risk for later psychiatric or behavioral disorders. However, with few exceptions (see, for example, Ledingham, 1981; Weintraub, Prinz, & Neale, 1978) peer relations have not been studied with this goal in mind. One possible reason for this failure is that there are only a handful of studies which

have examined peer popularity and rejection in the early, preschool years. Most of the peer sociometric studies have employed elementary school-age children. Nevertheless, studies which have examined peer sociometrics of preschool children have found these ratings to show both good retest-reliability over a 4 week period (Asher, Singleton, Tinsky & Hymel, 1979) and concurrent validity, as measured by classroom observations (Hartup, Glazer, & Charlesworth, 1967) and a resistance to deviation task (Furman & Masters, 1980). One of the purposes of the current study is to further examine the psychometric properties of preschool peer nominations, specifically in terms of their interrater reliability, short-term stability, and concurrent validity when compared with teacher ratings of disturbed or inappropriate behavior.

In identifying childhood behavior disorders, perhaps the most prevalent and salient are those externalizing behaviors (Achenbach & Edelbrock, 1978) of hyperactivity (i.e., Attention Deficit Disorder) and aggression (i.e., Conduct Disorder). Research on elementary school-age children has demonstrated that peer ratings of rejection are significantly related to both hyperactivity (see Milich & Landau, in press) and aggression, although the research regarding the latter is less consistent (see Green & Forehand, 1980), as some find aggressive children to be rejected by their peers (Green, Beck, Forehand, & Vosk, 1980) whereas other studies do not (Campbell & Yarrow, 1961; Lesser, 1959; Olweus, 1978). In contrast, the research regarding hyperactivity is quite consistent in finding these children to be highly rejected by their peers, even after periods of familiarity as short as two hours (Pelham & Bender, in press).

Although rather extensively studied in school-age children, the interrelationships among hyperactivity, aggression, and peer status has been virtually ignored for preschool children. Thus, a second purpose of the current study is to determine whether preschool children can successfully identify hyperactive

and aggressive behaviors, and if so, whether preschoolers show the same pattern of rejection toward children exhibiting these behaviors as do older children. A corollary issue is whether hyperactivity and aggression are distinct clinical entities in the preschool years. There is debate in the literature for older children whether these two externalizing dimensions can be successfully differentiated (see Loney, Langhorne, & Paternite, 1978, versus Lahey, Green & Forehand, 1980). Further, the results are inconsistent whether these two groups show different patterns of peer relations. Milich (Note 1) found hyperactivity, but not aggression, to be associated with peer rejection, whereas Pelham and Bender found both groups to be disliked by peers, although apparently for different reasons. The current study will examine the peer perceptions of preschoolers, specifically as they relate to the externalizing dimensions of hyperactivity and aggression.

Method

Subjects

The subjects for the current study consisted of 86 boys attending 12 different preschool classrooms in two small (population = 10,000; 25,000) midwestern communities. The boys ranged in age from 3-3 to 6-8, with a mean age of 5-0 years. The 12 preschool sites consisted of 3 Head Start programs, 4 day care classrooms, and 5 nursery schools. At the time of the study each child had been enrolled in his respective program for approximately eight months.

Since the present study investigated peer perceptions of hyperactive and aggressive children it was decided not to include girls in the subject pool, since these two symptom dimensions are much more prevalent in boys, even at the preschool age level (Crowther, Bond, & Rolf, 1981). However, it

was decided to collect peer ratings of the boys from both boys and girls, thus increasing the size of the rating pool. The final sample consisted of 86 boys rated by 154 classmates. The number of boys per class ranged from 4 to 11, while the number of total raters ranged from 8 to 15 per class.

Procedure

Two forms of data were collected for each subject in the study: teacher ratings and peer nominations. Each teacher was asked to complete two forms for each boy in the study: the 39-item Conners (1969) Teacher Rating Scale and the SNAP Checklist (Pelham & Bender, in press). The latter is a teacher rating scale version of the DMS-III criteria for Attention Deficit Disorder (ADD), and can be used as either a total score or with specific selection criteria to identify ADD children. Three factors from the Conners were employed in the current study: the Iowa Inattention/Overactivity (Iowa I/O) and the Iowa Aggression (Iowa Agg) scales (Loney & Milich, in press) and a 4-item Sociability factor (Werry, Sprague, & Cohen, 1975). The former two are empirically generated scales designed to measure attentional disorders and aggressive behavior, while the latter is a measure of teacher-perceived peer difficulties.

Peer Nominations: A 13-item Peer Perception Inventory (PPE) was developed for the current study. The PPI is a peer nomination procedure consisting of

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Insert Figure 1 about here

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one popularity item (#1), one rejection item (#2), 4 aggressive items (#'s 3, 5, 7, 9), 4 hyperactive items (4, 6, 8, 10) and 3 sociability items (#'s 11, 12, 13) that were adapted from the Pupil Evaluation Inventory (Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976).

Prior to the administration of the PPI, each boy in the study was photographed individually by a Polaroid SX-70 from a distance of one meter. The photos included the head and shoulders of each boy. Each of the 154 raters was interviewed individually by a female school psychology doctoral student. The interview began with the rater being asked to name every boy from the array of photographs of boys from his/her class. The photo array was randomized for each interview. This naming procedure was included in order to establish that the boys to be rated were known to their classmate raters. Prior to the administration of the 13-item PPI two training items were presented to ensure the raters' familiarity with the peer nomination procedures. The raters were asked to point to the two boys who are short and the two who run fast. For each of the 13 items of the PPI the raters were asked to nominate first one and then a second boy (e.g., who else runs around the room a lot) who best fit the item described. For the data analyses the boys' scores for each of the 13 items consisted of the total number of nominations received, divided by the total number of raters in the class.

Results

The first step in the analysis involved comparing the ratings made by the boys versus the girls to determine whether it would be appropriate to collapse the data across both sets of raters. Correlations between boy and girl ratings for each of the PPI items were computed. Except for item #6 (changes toys a lot, $r = .001$), all of the correlations were significant, and except for item 11 (exceptionally nice, $p < .03$), all of the correlations were significant at the $p < .002$ level or greater. These results are consistent with those obtained by both Asher, et al. (1979) and Pelham and Bender (in press) who similarly failed to find sex differences in children's sociometric ratings. Thus, for

these 12 items the boy and girl scores were collapsed, forming a total score. Since item 6 did not show a significant correlation between boy and girl nominations, and since in other analyses it did not operate in a consistent or predictable manner, it was excluded from subsequent analyses.

Factor Analyses: The next step in the analyses involved factor analyzing the items of the PPI to determine whether the a priori identified factors would

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Insert Table 1 about here

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emerge empirically. Two factors with eigenvalues greater than 1 were obtained, accounting for 66% of the total variance. High loadings on factor one were obtained for the 7 hyperactivity and aggressive items, as well as the rejection item. High loadings on factor two were obtained for the 3 sociability items and the popularity item. Although the hyperactive and aggressive items did not form separate factors it was decided to create such factors, as the present study was designed to address the possible discriminant validity of these two dimensions. In the subsequent analyses the three scales of hyperactivity (#'s 4, 8, 10), aggression (#'s 3, 5, 7, 9), and sociability (#'s 11, 12, 13) were employed, along with the popularity (#1) and rejection (#2) items. The internal consistencies of the hyperactivity, aggression, and sociability scales were .73, .89, and .86, respectively, indicating acceptable cohesion.

Stability: The PPI was readministered to one class of 9 boys (13 raters) one week after the initial administration to examine the retest reliability of this instrument. Correlations between the two scores were significant for the popularity, r (7) = .76, p < .01, rejection, r (7) = .82, p < .01, aggression, r (7) = .92, p < .01, and sociability, r (7) = .84, p < .01, scales, but the hyperactivity scale was only marginally significant, r (7) = .56, p < .10.

Having examined some of the measurement properties of the PPI, primarily in terms of interrater and retest reliabilities, the next step in the analysis involved a test of the validity of the Peer Perception Inventory. Specifically, the questions of interest were whether peer nominations of popularity and rejection related in significant and theoretically understandable ways with teacher and peer ratings of hyperactive and aggressive behavior. Table 2 presents a summary of the relevant correlations. Several conclusions seem

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Insert Table 2 about here

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warranted from an examination of this table: a) there are significant convergences between teacher ratings and peer nominations of the externalizing dimensions of hyperactivity and aggression, these correlations ranging from .30 to .45; b) there is no evidence for discriminate validity between these two externalizing dimensions, as the correlations across sources for the same dimension were no greater than those across sources for the two different dimensions; c) there is significant agreement between teacher ratings of peer problems and actual peer nominations of popularity and rejection; d) the correlation between peer nominations of popularity and rejection is significant and of the same general magnitude (r = -.49) as those reported in the sociometric literature (see Milich & Landau, in press); e) peer nominations of aggressive behavior show a significant and fairly substantial correlation with peer rejection nominations, r (84) = .56, p < .001, but no significant relationship with popularity nominations, r (84) = .05, p = .31; f) peer nominations of hyperactive behavior show significant and positive correlations with both peer nominations of rejection, r (84) = .47, p < .001, and popularity, r (84) = .18, p < .05. This last finding is somewhat unexpected in that, according to these significant corre-

lations, boys exhibiting hyperactive behavior can either be more rejected or more popular than boys low on this dimension. One other finding of note is that the age of the rated child did not correlate significantly with any of the factors or dimensions under investigation.

To present the material in Table 1 in a more manageable fashion, the correlations for the three traits of sociability, aggression and hyperactivity with two sources (Conners, PPI) were collapsed into a multitrait-multimethod (MTMM) matrix. Table 3 presents this matrix, and Table 4 presents the results

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Insert Tables 3 and 4 about here

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of an analysis variance of the correlations in the matrix. This is a procedure adopted from Stanley (1961, see Roberts, Milich, Loney, & Caputo, in press, for an example of its use), and presents a way of quantifying the degree of convergent and discriminant validity present in a MTMM matrix. As Table 4 indicates, there are significant convergent and discriminant validities, although the latter accounts for a negligible amount of the variance. There is also considerable error and method variance present. It is probable that the limited discriminant validity available is that between the PPI sociability and externalizing scales.

The preceding analyses have concentrated upon hyperactive and aggressive behaviors from a dimensional perspective. However, in clinical practice it is common to deal with diagnosed groups. In order to approximate this procedure a group of ADD children was formed, using criteria developed by Pelham and Bender (in press) for the SNAP Checklist. The criteria are based upon those developed for DSM-III, in that positive scores (i.e., pretty much or very much) on 2 of 5 of the Hyperactivity items, 3 of 5 Inattention items, and 3 of 6

Impulsivity items, are required to diagnose ADD. Using these criteria, 14 (16%) of the 86 boys were so identified. A stepwise multivariate discriminant function analysis was then undertaken, contrasting the 14 boys who reached criterion with the 72 who did not. The PPI variables of popularity, rejection, hyperactivity, aggression, and sociability served as the independent variables. The discriminant analysis revealed one significant discriminant function, wilkes lambda = .8065, X^2 (2) = 17.8, $p < .0001$. Items loading significantly on the discriminant function were the aggression and sociability scales. Univariate analyses revealed that, except for popularity, which was only marginally significant ($p < .07$), each of the remaining dependent variables significantly differentiated the two groups at the $p < .01$ level or better. Once again, there is evidence of the sensitivity of peer nominations in identifying teacher-identified problem disordered boys.

The preceding results have indicated good convergence between peer nominations of social status and both teacher ratings of and peer nominations of externalizing behavior. However, there was no evidence for the discriminant validity between the two externalizing dimensions of hyperactivity and aggression. It may be that this lack of separation is due to the fact that the raters range in age from 3½ years to children approaching 7 years. Not only is there almost a 3½ year difference between the youngest and oldest rater, but the differential cognitive development of children in this age range may be quite dramatic, a fact that may mask the fine-grain discriminations required in differentiating the two externalizing dimensions. Other research (Maas, Marecek, & Travers, 1978) has indicated that older children (i.e., 4th to 6th graders) can do a better job of assessing disordered behavior of children than do younger (e.g., 2nd graders) children. It is thus not unreasonable to assume that 6 year olds may perceive deviant behavior differently than 4 year olds.

The ages of both the boy and girl raters were available for 5 of the 12 preschool classes (41 raters, 78 raters) enabling an examination of this question. The raters were divided into 2 groups, those 5 years or older (N = 44, mean age = 5.5), and those younger than 5 (N = 34, mean age = 4-6). The PPI scores for the 41 rated boys were then recalculated into those made by older raters and those made by younger raters. By so doing it is possible to examine the effects of the age of the rater, holding constant the age of the rated children. The correlations between the older and younger ratings for the PPI popularity, rejection, hyperactivity, aggression, and sociability scales were all significant, ranging from .33 to .66. The older and younger ratings were then correlated with the teacher Inattention/Overactivity and Aggression scales. With one exception the magnitude and direction of the correlations were quite similar for both the older and younger raters. The one exception was that older child ratings of rejection correlated significantly with teacher oppositional ratings, r (39) = .27, p= .041, but the younger ratings did not, r (39) = .02, p = .44. Thus, there is limited evidence that older raters do a better job than younger raters, although no evidence that this would account for the failure of preschoolers to successfully discriminate between hyperactivity and aggression using a peer nomination procedure.

Discussion

The current study was designed to examine the peer perceptions of preschool children, specifically as they relate to popularity, rejection, and the externalizing dimensions of hyperactivity and aggression. The results of the analyses were quite straightforward in indicating that peer nominations, even at these younger ages, fulfill the psychometric criteria of interrater reliability (i.e., boy versus girl), stability, and validity. The peer nominations of externalizing behavior correlated significantly with teacher ratings of the same behavior. Further, peer nominations of rejected children correlated

significantly with both teacher ratings of, and peer nominations of, hyperactivity and aggression. These results are consistent with earlier findings obtained for elementary school-age children indicating that both teacher nominated hyperactive (see Milich & Landau, in press; Pelham & Bender, in press) and aggressive children (Green, et al., 1980) are negatively sanctioned by their peers, although previous results regarding the aggressive dimension are less clear-cut and more equivocal (see Olweus, 1978; Marshall and McCandless, 1957, versus Green, et al.). These results are also consistent with previous research which finds rejection to have more concomitants than popularity (Cowen, et al., 1973).

The second purpose of the current study was to determine whether the two externalizing dimensions of hyperactivity and aggression exhibited differential relationships with peer popularity and rejection. Previous research, especially that with clinic samples, has demonstrated that it is both feasible and theoretically meaningful to differentiate these two externalizing dimensions (Loney, et al., 1978; Milich, Loney & Landau, Note 2). Milich (Note 1) further presents suggestive evidence that hyperactivity and aggression may show differential relationships with peer status, although Pelham and Bender (in press) found both hyperactive and aggressive children to be disliked, although for different reasons. The results of the current study, with few exceptions, do not reveal such differential patterns. Although it is impossible to account for this failure to find such differences (i.e., is this an accurate reflection of reality or an experimental artifact?), a few interesting findings emerged which may help shed some light on the interrelationship of hyperactivity, aggression, and peer status. For one thing, the peer nominated aggression dimension appeared to be both psychometrically more reliable, and theoretically more consistent, in its patterns of relationships than was the peer nominated hyperactivity

dimension. The stability of the former was significantly (z = 1.65, p < .09, two-tailed test) greater than that of the latter. Similarly, peer nominated aggression correlated greater with teacher rated ADD than did peer nominated hyperactivity. Further, the aggression dimension was positively and significantly related to peer rejection, but not to peer popularity, a finding consistent with other research in the field (Dodge, Note 3). In contrast, the hyperactivity dimension correlated positively and significantly with both peer rejection and popularity. In other words, boys high on hyperactivity nominations tended to be either more liked or more disliked than boys lower on this dimension. This would suggest either that the hyperactive behaviors employed in the current study had different affective values to different raters, or that in general the behavioral examples employed were not appropriate measures of hyperactive behavior for this age group. An examination of the individual items sheds some light on this question. As Table 5 indicates, of the 3 hyperactivity items, "runs around the room a lot" correlates

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Insert Table 5 about here

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positively and significantly with peer popularity, but not with peer rejection. The other two items show the more traditional pattern of a significant positive relationship with rejection and an absence of a significant relationship with popularity. Thus, a behavior (i.e., overactivity) which is traditionally viewed as a major symptom of ADD children during the elementary school years is actually highly positively viewed by preschoolers. It is interesting to note that Clifford (1963) found that, for preschoolers, high positive visibility was positively associated with popularity. Running around the room a lot probably increases one's visibility. This finding

highlights an important point in attempting to identify hyperactive children in the preschool setting. Specifically, the situational demands are different than those of an elementary school classroom, and behaviors (e.g., running around the room) which would probably be quite disruptive and aversive in an elementary classroom are apparently not so in a preschool setting. Similarly, it is difficult to identify appropriate peer-nominated measures of attentional difficulties in the preschool setting, since the demands for sustained attention to tasks is not nearly as great as in a regular school classroom. In the current study the peer nomination item of sustained attention ('changes toys a lot') was the only one of the 13 PPI items to fail to reach acceptable levels of interrater reliability. Along these lines, it is interesting to note that Achenbach (1980), reviewing the results of factor analyses of his Child Behavior Checklist for different age groups, found hyperactivity factors for boys in the age ranges 6 to 11 and 12 to 18, but did not obtain such a factor for boys aged 4-5. Similarly, Glow and Glow (1980) found that, for elementary aged children, peer ratings of items related to hyperactivity did form a coherent syndrome. These results would suggest that the failure of the current study to identify a distinct hyperactivity dimension may reflect age and/or demand characteristics of the preschool setting.

In summary, the current study found preschoolers' nominations of both prosocial and externalizing behavior to be both reliable and valid, when compared with teacher ratings of the same behaviors. Further, it is clear that inappropriate and disruptive behavior in the preschool setting is associated with peer rejection, although its relationship with peer popularity is less consistent and clear-cut. However, there was no strong evidence for differential effects between the hyperactivity and aggression dimensions.

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FIGURE 1

PEER PERCEPTION INVENTORY (PPI)

POINT TO (OR SHOW ME) THE BOY:

1. YOU LIKE THE MOST.
   WHO ELSE DO YOU LIKE?
2. YOU DON'T LIKE.
   WHO ELSE DON'T YOU LIKE?
3. WHO IS MEAN.
   WHO ELSE IS MEAN?
4. WHO RUNS AROUND THE ROOM A LOT.
   WHO ELSE RUNS AROUND THE ROOM A LOT?
5. WHO FIGHTS, PUNCHES, AND HITS A LOT.
   WHO ELSE FIGHTS, PUNCHES, AND HITS A LOT?
6. WHO CHANGES TOYS A LOT OR NEVER PLAYS WITH ONE TOY FOR VERY LONG.
   WHO ELSE CHANGES TOYS A LOT?
7. WHO IS BOSSY AND TELLS THE OTHERS WHAT TO DO.
   WHO ELSE IS BOSSY AND TELLS THE OTHERS WHAT TO DO?
8. WHO CAN'T SIT STILL.
   WHO ELSE CAN'T SIT STILL?
9. WHO GETS MAD EASILY.
   WHO ELSE GETS MAD EASILY?
10. WHO DOESN'T LISTEN.
    WHO ELSE DOESN'T LISTEN?
11. WHO IS ESPECIALLY NICE.
    WHO ELSE IS ESPECIALLY NICE?
12. WHO HELPS THE OTHER CHILDREN.
    WHO ELSE HELPS THE OTHER CHILDREN?
13. EVERYBODY LIKES.
    WHO ELSE DOES EVERYBODY LIKE?

TABLE 1

FACTOR ANALYSIS OF THE PPI

FACTOR	EIGENVALUE	PERCENT OF VARIANCE
1	4.84	40.4
2	3.40	28.4

		FACTOR 1	FACTOR 2
1.	LIKE MOST	.0745	.8660
2.	DON'T LIKE	.5846	-.4878
3.	MEAN	.8540	-.2006
4.	RUNS AROUND ROOM	.6466	.3873
5.	FIGHTS	.8575	.0131
7.	BOSSY	.7339	.0591
8.	CAN'T SIT STILL	.7658	.0236
9.	GETS MAD EASILY	.8025	.0201
10.	DOESN'T LISTEN	.6655	-.1221
11.	ESPECIALLY NICE	-.0348	.7821
12.	HELPS OTHERS	-.0572	.7449
13.	EVERYBODY LIKES	.0071	.8513

TABLE 2

Correlations Among Conners and PPI Scales

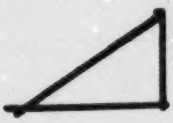
	Age	Teacher Sociability	Teacher Aggression	Teacher Inattention	PPI Sociability	PPI Aggression	PPI Hyperactivity	PPI Popularity	PPI Rejection
Age	1.00								
Teacher Sociability	-.06	1.00							
Teacher Aggression	-.13	.78***	1.00						
Teacher Inattention	.00	.61***	.82***	1.00					
PPI Sociability	.12	-.32***	-.22*	-.24*	1.00				
PPI Aggression	.12	.26**	.45***	.41***	-.07	1.00			
PPI Hyperactivity	.03	.19*	.39***	.33***	.07	.79***	1.00		
PPI Popularity	.07	-.31**	-.18*	-.17	.75***	.05	.18*	1.00	
PPI Rejection	-.10	.33***	.31**	.47***	-.40***	.56***	.47***	-.49***	1.00

* p < .05
** p < .01
*** p < .001
One-tailed Test

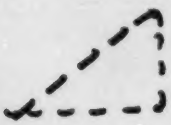
TABLE 3

MULTITRAIT-MULTIMETHOD MATRIX

		CONNERS			PPI		
		SOC.	AGG.	HYP.	SOC.	AGG.	HYP
CONNERS	SOC.	1.00					
	AGG.	.77	1.00				
	HYP.	.61	.82	1.00			
PPI	SOC.	-.32	-.21	-.24	1.00		
	AGG.	.26	.45	.41	-.07	1.00	
	HYP.	.19	.39	.33	.07	.79	1.00



= HETEROTRAIT-MONOMETHOD TRIANGLES



= HETEROTRAIT-HETEROMETHOD TRIANGLES

TABLE 4

Summary of Analyses of Variance of MTMM Matrix

(86 Subjects, 3 Traits, 2 Sources)

Source	df	Sum of Squares	Mean Square	F	Variance Component
Subjects[a]	85	256.0	3.01	7.71***	.44
Subjects X Trait[b]	170	96.5	5.68	1.45*	.08
Subjects X Scale[c]	85	95.46	1.12	2.87**	.24
Error	170	67.90	.39		.39

* $p < .05$

** $p < .01$

*** $p < .001$

[a] Convergent validity

[b] Discriminant validity

[c] Method variance

TABLE 5

CORRELATIONS AMONG PPI HYPERACTIVITY ITEMS AND POPULARITY AND REJECTION

PPI ITEMS	PPI POPULARITY	PPI REJECTION
4 - Runs Around the Room a Lot	.41***	.17
8 - Can't Sit Still	.05	.41***
10 - Doesn't Listen	-.01	.54***

*** $p < .001$